

Appln No. 10/634,337
Amdt date March 28, 2007
Reply to Office action of January 5, 2007

REMARKS/ARGUMENTS

Claims 1-28 and 31-34 and 36-37 are pending in the application, of which claims 1, 9, 12, 18, 24, 26-27, 31-32 and 37 are independent. Claims 1, 9, 12, 18, 24, 26-27, 31-32, 34, 36 and 37 have been amended herein. Claims 29 and 30 are canceled herein without prejudice. Applicant thanks the Examiner for the thorough examination of the application and also for the indication that claims 9-10, 12-14, 24, 26, 31-34 and 37 include allowable subject matter. Applicant respectfully requests reconsideration and allowance of claims 1-28, 31-34 and 36-37.

I. Objection to Claims 4-6, 9-10, 22, 24, 31, 34 and 37

Claims 4-6, 9-10, 22, 24, 31, 34 and 37 were objected to allegedly because of some informalities. The Office Action states that "[t]he limitation of "the selection signal" should be changed to --a selection signal-- in claims 4, 9, 22 and 24 since there is no antecedent basis." Applicant submits however, the antecedent basis for the selection signal appears in the preamble of claim 1 as "a plurality of scan lines for transferring a selection signal." Therefore, Applicant requests that the objection to claims 4-6, 9-10, 22 and 24 be withdrawn.

The Office Action also states that "[t]he limitation of "a second selection signal" should be changed to --a first selection signal-- in claims 31 and 34, line 3 since there is no first selection signal in claim 29." and that "[t]he limitation of "a second selection signal" should be changed to --a first selection signal-- in claim 37, line 18." The limitation of "second selection signal" has been amended to "selection signal" in claims 31, 34 and 37. Therefore, Applicant requests that the objection to claims 31, 34 and 37 be withdrawn.

II. Rejection of Claim 30 under 35 U.S.C. § 102(e)

Claim 30 was rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Kasai (US 6,989,826). As claim 30 is cancelled herein, the rejection of claim 30 is now moot.

III. Rejection of Claims 1-18, 11, 15-23, 25, 27-30 and 36 under 35 U.S.C. § 103(a)

Claims 1-8, 11, 15-23, 25, 27-30 and 36 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Gwon (CN 1361510) in view of Kasai. As claims 29 and 30 are canceled herein, the rejection of claims 29 and 30 is now moot.

In rejecting these claims, the Examiner contends that "Kasai teaches a display panel comprising a third switching element (213) being turned off in response to a second control signal for electrically isolating a first Transistor (214) from a display element (220) (see figure 4-5(d), 22; column 5, lines 60-68 and column 6, lines 1-11). It would have been obvious to have modified Gwon with the teaching of Kasai, so as to improve the display quality by individually controlling a light emitting elements."

Three criteria must be met, however, in order to establish a *prima facie* case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art reference, or combination of references, must teach or suggest all the claim limitations. (Emphasis Added, MPEP § 2142).

As can be seen in FIG. 4 of Kasai, Kasai teaches a current programming type display device. As such, as recited in Col. 5, lines 24-32 of Kasai, "[t]he pixel circuit 210 is a current-program type circuit that adjusts the emission level of the organic EL element 220 in accordance with the current value that flows through the data line Xm. . . The storage capacitor 230 holds an electric charge corresponding to a current of the data signal that is supplied via the data line Xm." (emphasis added).

As also shown in FIG. 4, the second transistor 212 and the third transistor 213 are connected together at a node (hereinafter referred to as "the Node") to the fourth transistor 214 that has the capacitor 230 coupled between its source and gate. Since the pixel circuit 210 of FIG. 4 in Kasai is a current programming type, unless the third transistor 213 is provided between the Node and the organic EL element 220, some of the current on the data line Xm provided by the single-line driver 410 will be diverted to the organic EL element 220, therefore,

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making it extremely difficult or impractical to program the pixel circuit (i.e., charge the capacitor 230 with a programming current).

In contrast, the pixel circuit disclosed by Gwon appears to be a voltage programming type. Therefore, the capacitor C1 (e.g., shown in FIG. 7 of Gwon) can be charged with a precharge voltage or a data voltage without requiring a similar isolation transistor, such as the third transistor 213 of Kasai. In fact, as the Examiner correctly observed on page 5 of the Office Action, "Gwon fails to disclose a third switch for electrically isolating the first transistor from the display element." Further, neither Gwon nor Kasai provides any motivation to combine the references to place a transistor between the driving transistor M1 (e.g., shown in FIG. 7 of Gwon) and the OLED in a voltage programming type display device.

Independent claim 1 as amended now recites, in a relevant portion:

A display panel for image display using a voltage programming method . . .
a first switching element coupled to a main electrode of the second transistor, wherein the first switching element transfers the data voltage from the data lines to the second transistor in response to the selection signal from one of the two adjacent scan lines, so as to charge the capacitor with the data voltage;
a second switching element for transferring a precharge voltage to the control electrode of the first transistor in response to a first control signal before the data voltage is supplied; and
a third switching element being turned off in response to a second control signal for electrically isolating the first transistor from the display element, so as to prevent a current from being applied to the display element while the capacitor is being charged with the precharge voltage. (emphasis added).

Since there is no motivation to combine Gwon and Kasai to place "a third switching element being turned off in response to a second control signal for electrically isolating the first transistor from the display element . . . " in a display panel for image display using a voltage programming method as claimed in claim 1, a *prima facie* case of obviousness cannot be established for claim 1 over Gwon and Kasai. Therefore, Applicant requests that the rejection of claim 1 be withdrawn and that this claim be allowed.

Independent claim 18 recites, in a relevant portion:

A method for driving a voltage programming type image display device . . .

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transferring a precharge voltage to the control electrode of the first transistor in response to a first control signal during a first time period;
transferring a data voltage to the control electrode of the first transistor through the second transistor in response to a selection signal from one of the two adjacent scan lines during a second time period; and
interrupting the transfer of the data voltage,
wherein the first transistor is electrically isolated from the display element during at least one of the first time period in which a capacitor coupled to the first transistor is charged with the precharge voltage, or the second time period in which the capacitor is charged with the data voltage.

For reasons similar to those given above in reference to claim 1, claim 18 is not obvious over Gwon and Kasai because of at least the above limitations. Therefore, Applicant requests that the rejection of claim 18 be withdrawn and that this claim be allowed.

Independent claim 27 recites, in a relevant portion:

A voltage programming type pixel circuit,. . .
wherein the precharge voltage is applied to the control electrode of the first transistor in response to a control signal for a first time period, and the data voltage is applied to the control electrode of the first transistor in response to a select signal for a second time period, and the first transistor is electrically isolated from the display element by the switching means during at least one of the first time period in which the capacitor is charged with the precharge voltage, or the second time period in which the capacitor is charged with the data voltage.

For reasons similar to those given above in reference to claim 1, claim 27 is not obvious over Gwon and Kasai because of at least the above limitations. Therefore, Applicant requests that the rejection of claim 27 be withdrawn and that this claim be allowed.

Since claims 2-8, 11, 15-17, 19-23, 25 and 28 depend, directly or indirectly, from one of independent claims 1, 18 or 27, these claims each incorporate all the terms and limitations of their respective base claims in addition to other limitations, which together further patentably distinguish them over the cited references. Therefore, Applicant requests that the rejection of claims 2-8, 11, 15-17, 19-23, 25 and 28 be withdrawn and that these claims be allowed.

Claim 36 now depends from allowable claim 31 as described below.

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IV. Allowable Claims 9-10, 12-14, 24-26, 31-34 and 37

Claims 9-10, 12-14, 24, 26 and 31-34 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Independent claim 37 is allowable.

Since claims 9, 12, 24, 26, 31 and 32 have been rewritten in independent form as required by the Examiner, Applicant submits that these claims and claim 37 are now in a condition for allowance. Incidentally, claims 24, 26, 31-32 and 37 have been further amended slightly to recite "wherein the first transistor is electrically isolated from the display element during at least one of the first time period or the second time period" in claims 24 and 26, and "at least one of a precharge voltage or a data voltage representative of the image portion" in claims 31, 32 and 37. Further, claim 31 has been amended to change a claim term from "third switching element" to "second switching element." Applicant believes that these claims were amended for a reason not related to patentability, and remain allowable.

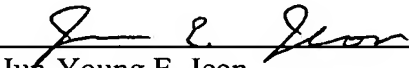
Since claim 36 now depends from allowable claim 32, it incorporates all the terms and limitations of claim 32 in addition to other limitations, which together further patentably distinguish this claim over the cited references. Therefore, Applicant requests that the rejection of claim 36 be withdrawn and that this claim be allowed.

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V. Concluding Remarks

In view of the foregoing amendments and remarks, Applicant earnestly solicits an early issuance of a Notice of Allowance with claims 1-28, 31-34 and 36-37. If there are any remaining issues that can be addressed over the telephone, the Examiner is cordially invited to call Applicant's attorney at the number listed below.

Respectfully submitted,
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